

1 Claim 14 (amended). An acoustic generator as in Claim 11, including:
2 means for [adjusting the position of] positioning said
3 dispersing means so that the dispersing means can be moved [further into
4 or out of] in relation to the second end of said pipe.

REMARKS

This amendment is in response to the Office Action mailed October 2, 1987 (Paper No. 3) and is accompanied by a Petition For Revival of an Application for Patent Abandoned Unintentionally under 37 CFR 1.137(b). By said Office Action, the specification was objected to under 35 USC 112, first paragraph, as failing to provide an adequate written description of the invention and failing to adequately teach how to make or use the invention; Claims 1-15 were rejected under 35 USC 112, first paragraph, for the reasons set forth in the above objection to the specification; Claims 2, 4, 5, 7, 9, 13 and 14 were rejected under 35 USC 112, first and second paragraphs; Claims 1-9 were provisionally rejected under 35 USC 101 as claiming the same inventions as that of Claims 1-9 of copending application S.N. 06/623,282; Claims 1-15 were provisionally rejected under 35 USC 102(e) as being anticipated by copending application S.N. 06/623,282; Claims 10-15 were provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 10-13 of copending application S.N. 06/623,282; Claims 1 and 3-9 were rejected under 35 USC 102(b) as anticipated by, or in the alternative, under 35 USC 103 as obvious over Hermsen et al or Goldberg; Claim 2 was rejected under 35 USC 103 as being unpatentable over Hermsen et al or Goldberg as applied above and further in view of Stratton; Claims 10-14 were rejected under 35 USC 103 as being unpatentable over Hermsen et al or Goldberg in view of Kirby and Axelson; and Claim 15 was rejected under 35 USC 103 as being unpatentable over Hermsen et al or Goldberg in view of Kirby and Axelson as applied to Claims 10-14 above, and further in view of Stratton.

By this amendment, Claims 1-2, 5, 7 and 10 have been amended to define the invention with greater clarity and particularity and to distinguish over the prior art and Claims 4 and 9 have been cancelled. (Claims 3, 6, 8 and 11, 12, 13 and 15 remain as before.)

Firstly, applicants wish to draw the attention of the Examiner to the fact that S.N. 06/623,282 is now abandoned. Therefore, all provisional type rejections are no longer believed to be applicable.

With respect to the objection to the specification under 35 USC 112, first paragraph, applicants note that page 7, lines 3-6 states that the controller means 50 may be operated manually as a simple manual switch means or may be an electronic unit which can be programmed to emit a series of switching signals in a coded sequence. Applicants respectfully submit that it is obvious to one skilled in the art how to make a program to emit such a series of switching signals and it is therefore unnecessary for applicants to provide an algorithm disclosing such a program.

Reconsideration and allowance of Claim 1 is respectfully requested. Hermsen et al disclose a noise generator which includes expanding a gas in a nozzle which has a fixed, machined groove or notch in a divergent portion of the nozzle. This results in "noise" (i.e. a band of frequencies). The user utilizing the Hermsen et al device cannot control the band or the total energy once the groove has been machined. The Hermsen et al device is machined to a specific target frequency. Applicants, on the other hand, by utilizing a moving-piston, pulse engine can activate the engine so that the energy is both controllable and variable to predetermined, specific frequencies. It is further noted that Claim 1 has been amended to describe the fact that it operates in the low frequency range below 800 Hz. Operation in this range is necessary to provide acoustic energy which facilitates long range underwater communication. Hermsen et al, on the other hand, as noted in column 1, first paragraph, generates ultrasonic noise. Such ultrasonic noise is limited to a very short distance and cannot be used for the purpose of communication, only for jamming or decoy purposes. The Hermsen et al

device is specifically linked to its ability to provide underwater propulsion concurrently with its noise generation and it is thus directed for use primarily as a decoy. Present applicants, on the other hand, do not utilize their moving piston, pulse engine for propulsion purposes. As noted on page 2, line 31, and page 3, line 1 of specification, the gaseous pulse discharge of the engine occurs transversely to the longitudinal axis of the engine without any propulsive effect.

No new matter is deemed to have been added by way of the limitation regarding frequency range. Page 7, lines 19-20, states that the output pulses from 0 to 800 Hz. This frequency spectrum is illustrated in Figure 5.

The Goldberg reference discloses a hydraulic mechanical device which positions a piston in an open-ended cylinder. In operation, the piston within the open-ended cylinder is displaced toward the open end of the cylinder while the device is submerged. Subsequently, the piston is released and the piston is allowed to travel to the closed end of the cylinder compressing the gases therein and resulting in piston rebound. This rebound imparts a hydraulic pulse to the water following the piston from the open end of the cylinder. This results in a true hydraulic pulse which is used for seismic applications.

Claim 1 has been amended to specifically limit the invention to a device which is operated by the controlled release of the combustion gases from the engine. No new matter is deemed to have been added by way of this limitation. Antecedent basis can be found on page 6, lines 24-25. By utilizing the controlled release of the combustion gases to produce pulses of acoustic energy, the applicant is able to effectively utilize his device at any desired depth. The Goldberg device, on the other hand, is dependent upon the pressure resulting from the depth of water because the water pressure itself provides the energy for the rebound, the rebound providing the required hydraulic pulse. Furthermore, it is noted that the intended purpose of the Goldberg device is entirely distinct from the intended purpose of present applicants' device. Goldberg desires

production of acoustic pulses for use in performing marine seismic exploration, while present applicants' device is directed toward marine communication.

Reconsideration and allowance of dependent Claims 2-3, and 5-8 is respectfully requested. Claim 2 has been amended to utilize proper definite claim language. Claims 5 and 7 have been amended to recite positive limiting metes and bounds. (Antecedent basis for this clarifying language can be found on page 4, lines 16-19, of the specification.) Each of these claims depend ultimately from Claim 1 and include the limitations of amended independent Claim 1. They are therefore also deemed to be in allowable condition.

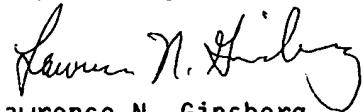
Reconsideration and allowance of independent Claim 10 is respectfully requested. Claim 10 has been amended to include the frequency limitations added to Claim 1, thus clearly distinguishing it from the Hermsen et al reference. It is believed that Claim 10, even before amendment, was clearly distinguishable from the Goldberg reference inasmuch as it specifically describes how the combustion gases travel through the pipe and spread out as they flow around the disperser means. (Thus, the above discussion regarding Goldberg and Hermsen et al applies equally with respect to this claim.) The Kirby and Axelson references add little to the deficiencies of Hermsen et al or Goldberg. Kirby discloses a recoil attenuation device which is used for gas guns which create pulses in the underwater medium by introducing gas under high pressure. Thus, the Kirby device is specifically not used to generate acoustic energy. The Axelson reference discloses a bomb-type underwater sound signal source which is limited to uncontrolled high frequencies.

Reconsideration and allowance of dependent Claims 11-15 is respectfully requested. The language of Claim 14 has been modified to contain more definite, acceptable claim language. Claims 11-15 depend ultimately from independent Claim 10 and include the limitations of amended Claim 10. They are therefore deemed to be in allowable condition.

In view of the foregoing amendment and remarks, it is respectfully urged that Claims 1-3, 5-8 and 10-15 are in allowable condition and such action, as well as the passage of this case to issue, is respectfully requested.

If the Examiner has any question concerning the wording of the claims or believes that an interview would be beneficial to the advancement of the prosecution of the subject application, a telephone call to the undersigned would be appreciated.

Respectfully submitted,



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September 29, 1988

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